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THE HORN SPEAKER

TELEVISION TROUBLE CHART

OBSERVED EFFECT	PROBABLE CAUSES	REMEDIES
1. No image, pattern or spot on C-R tube even when brilliancy control is fully advanced.	1. Failure of high-voltage power pack. Excessively high negative bias on C-R tube grid. Image or pattern is entirely off the screen. Defective C-R tube.	1. Check high-voltage power pack. Check C-R tube bias. Check settings of beam centering controls. Try another C-R tube.
2. No image. Raster is present. Back traces are visible when brilliancy control is advanced, and are stationary.	2. Defect in video amplifier or its power supply connections. (Stationary raster indicates synchronizing impulses are controlling sweep circuits.)	2. Check tubes, parts and leads in the v.f. amplifier between the clipper connection and the C-R tube.
3. No image. Raster is present. Back traces are visible when brilliancy control is advanced, but are moving.	3. Defect in video i.f. amplifier, video detector, video amplifier stages ahead of clipper input connection.	3. Check tubes, parts and leads in signal and supply circuits of suspected stages. (Moving raster indicates synchronizing impulses are not controlling vertical blocking oscillator.)
4. No image. NO SOUND. Raster is present. Back traces are visible when brilliancy control is advanced, but are moving. Telecaster is known to be on air.	4. Defect in receiving antenna, preselector, oscillator or mixer-first detector. (Moving raster and absence of sound indicates that no signals are getting through the mixer-first detector output circuit.)	4. Check tubes, parts and leads in signal and supply circuits in and ahead of mixer-first detector. Check the low-voltage power supply serving these stages. Check the antenna system.
5. Only a spot on C-R tube screen. (No saw-tooth voltage on horizontal and vertical deflecting plates.)	5. Failure of power pack which serves sweep system. Defect in any voltage supply lead or part which is common to both horizontal and vertical sweep channels.	5. Check power pack serving sweep system, particularly the rectifier tube and filter condensers. Check common voltage supply connections to both sweep channels.
6. Horizontal line only. (No sawtooth voltage on vertical deflecting plates.)	6. Failure of the vertical sweep channel, due to a defect in the vertical blocking oscillator stage or between this stage and the vertical deflecting plates.	6. Check tubes, parts, leads and supply voltages, working from vertical blocking oscillator to vertical deflecting plates.
7. Vertical line only. (No saw-tooth voltage on horizontal deflecting plates.)	7. Failure of horizontal sweep channel, due to a defect in the horizontal blocking oscillator stage or somewhere between this stage and the horizontal deflecting plates.	7. Check tubes, parts, leads and supply voltages, working from horizontal blocking oscillator to horizontal deflecting plates.
8. Insufficient picture width. (Horizontal sweep voltage too low.)	8. Improper setting of horizontal size control. Defective tube, defective part or improper supply voltages in horizontal saw-tooth sweep oscillator stage or horizontal sweep output stage.	8. Adjust horizontal size control. If picture is still too narrow, check tubes, parts and supply voltages in horizontal output stages.
9. Insufficient picture height. (Vertical sweep voltage too low.)	9. Improper setting of vertical size control. Defective tube, defective part or improper supply voltages in vertical saw-tooth sweep oscillator stage or in vertical sweep output stage.	9. Adjust vertical size control. If picture is still too short, check tubes, parts and supply voltages in vertical saw-tooth sweep oscillator stage and vertical output stage.
10. Picture not centered with respect to mask. (Shifted to one side, to top or to bottom.)	10. Improper setting of vertical or horizontal beam centering control, giving improper bias on deflecting plates. Electromagnetic deflecting coils improperly positioned.	10. Adjust beam-centering controls. Adjust positions of electromagnetic deflecting coils; always turn off power when working on deflecting coils.
11. Picture is tilted with respect to mask.	11. Magnetic deflecting coils are not properly oriented. Electrostatic deflection type of C-R tube is not properly oriented.	11. Rotate electromagnetic deflecting yoke or entire C-R tube until the tilt is eliminated. Turn off power when making adjustments.
12. Two narrow, full-height pictures side by side, separated by a black vertical bar.	12. Horizontal sweep circuit is operating at one-half normal frequency due to improper setting of horizontal hold control.	12. Increase frequency of horizontal blocking oscillator by adjusting horizontal hold control.
13. Two short, full-width pictures one above the other, separated by a black horizontal bar.	13. Vertical sweep circuit is operating at one-half normal frequency due to improper setting of vertical hold control.	13. Increase frequency of vertical blocking oscillator by adjusting vertical hold control.
14. Right-hand half of picture superimposed on left-hand half.	14. Horizontal sweep circuit is operating at twice normal frequency due to improper setting of horizontal hold control.	14. Decrease frequency of horizontal blocking oscillator by adjusting horizontal hold control.
15. Bottom half of picture superimposed on top half.	15. Vertical sweep circuit is operating at twice normal frequency due to improper setting of vertical hold control.	15. Decrease frequency of vertical blocking oscillator by adjusting vertical hold control.
16. Entire picture slips or moves up or down. Picture is clear, with normal contrast and no abnormal interference patterns.	16. Vertical sweep channel is not "holding on to" vertical synchronizing impulses. Pulses at the input of the saw-tooth sweep generator may be too weak.	16. Check for defective parts or tubes in the vertical sweep channel, the frequency separator, the clipper and any synchronizing impulse amplifier stages if adjustment of the vertical hold control does not clear up the trouble.
16A. Same as above but with interference patterns.	16A. Excessively strong static or man-made interference pulses may be taking over control of the vertical sweep channel, or video signals may be getting through the clipper and affecting the vertical sweep generator.	16A. Listen to the vertical sweep output with headphones (high voltage off); video signals in this sweep channel may give a raspy tone instead of the usual steady tone (some sweep generator circuits will not pass video signals, so this test is not conclusive.) Adjust the hold controls.

The screen of an improperly-operating television receiver is literally a sign board pointing out probable locations of the trouble. Special test patterns which are transmitted by television stations from time to time, particularly at the beginning of a broadcast, help the radioman find the defect.

In the chart below, which was prepared by engineers of the *National Radio Institute*, the effect on the television screen is described in the left-hand column. Its probable cause is listed in the middle column, and the likely remedy is given at the extreme right. Unless otherwise indicated, you may assume that the sound section of the receiver is operating normally and that all picture characteristics except those mentioned in the left-hand drawing are essentially normal.

Around the Dial

By THE DIAL TWISTER

CRIME DOES NOT PAY ON OLD RADIO

Remember how busy Dick Tracy, Little Orphan Annie, Tom Mix, Jack Armstrong, etc. were fabricating idealism through their own virtues, while proving how foolish a character could be, who followed a path of crime? If you are so young, I suggest you get a tape of these early series. These shows back in the 30's and subsequent years might have helped saved society from harsher problems than it has suffered. As it can be said, "Crime does not pay, but at any rate, it, for sure, costs society a high price. The old radio shows promoted anti crime activities and almost everyone listened to them— entertaining at the same time.

FINDING OLD SETS

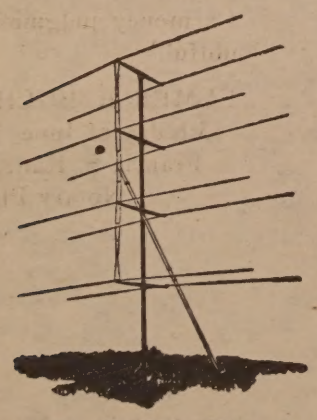
Using the professional method, a collector hobbyist can enhance his collection at a cost somewhat

less than buying from dealers. For sake of clarity and defining our term, we can describe the professional method as offering commissions to find old sets. Most collectors shy away from this method because of the social skills involved and don't want to risk a bad reputation. For instance, many people wanting to earn some extra money by finding old sets, will look for oldies and often bring or tell the location of a set for sell to a collector who does not value it very highly. If the finder can not sell the set after he has paid for it, he will end such a career or never buy for that colletor again.

Many buyers or colletors who offer commissions go directly to the seller to purchase the old radio set and then pay the finder his finder's fee. One of the best ways to get a bad reputation that is "hot off the press" grapevine gossip is to buy a set from a finder or a designated seller and then refuse to pay the finder's fee because the set was not really what the collector wanted.

Thinking about buying sets from a dealer? If so, you are likely to gain a large collection, if you have the money, which is not the thought here or hurting the dealer's business, but you are likely to missed a lot of the fun of finding old radio sets, even if it is through the help of a finder.

These series of finding old radio sets have been dedicated to finding first degree sets, which is intended to mean that the sets are not bought or traded through another collector or colletors organized events, such as club auctions, swap meets, etc. After all, the more first degree finds, the more sets, which might be called second degree sets, can be found at radio club meetings.



OBSERVED EFFECT	PROBABLE CAUSES	REMEDIES
17. Entire picture slips or moves up or down. Picture is dim, with poor contrast and interference patterns.	17. The v.f. signal at the input to the clipper is too weak, indicating trouble somewhere ahead of the clipper, a poor antenna system, or too low signal strength at the receiver location.	17. Check all tubes and parts for defects which could cause low gain in stages between the clipper input and the antenna. Check the antenna system for signal pickup and interference pickup. Readjust vertical hold control.
18. Part of the picture (usually at the top) is highly distorted and shifted in a horizontal direction. Rest of picture is clear, with normal contrast and no abnormal interference patterns. No vertical movement.	18. Horizontal sweep channel is not "holding on to" horizontal synchronizing impulses, with result that picture "tears." Pulses may be too weak at the input of the saw-tooth generator. Video signals may be getting through the clipper and affecting the horizontal sweep generator.	18. Check for defective parts or tubes in the horizontal sweep channel, the frequency separator, the clipper and any synchronizing impulse amplifier stages if adjustment of the horizontal hold control does not clear up the trouble.
19. Part of the picture is highly distorted and shifted in a horizontal direction. Picture is dim, with poor contrast and interference patterns.	19. The v.f. signal at the input to the clipper is too weak, indicating trouble somewhere ahead of the clipper, a poor antenna, system or too low signal strength at the receiver location.	19. Check all tubes and parts for defects which could cause low gain in stages between the clipper input and the antenna. Check the antenna system for signal pickup. Readjust horizontal hold control.
20. All parts of picture are fuzzy—not clearly defined—and fine details are blurred.	20. Electron beam may not be properly focused on C-R tube screen, due to improper focusing electrode (first anode) voltage.	20. Adjust focus control for maximum clearness of sharply defined lines in picture. If this does not help, check the focus control and associated parts in the voltage divider of the C-R tube power pack.
21. Only the fine details in the picture are blurred or absent. Particularly noticeable on distant scenes or long studio shots.	21. Loss of higher video frequency components, due to attenuation of these components somewhere in the receiver. Consider whether it is due to original limitations in receiver performance.	21. Check alignment of video i.f. coupling units. Look for defects in the coils, condensers, resistors, and leads of coupling and equalizing circuits in the video i.f. amplifier, video detector and v.f. amplifier.
22. Picture is smeared, with white or black shadows at the right of each object.	22. Loss of lower video frequency components, accompanied by excessive phase shift at low frequencies.	22. Look for a shorted low-frequency compensating resistor in a v.f. amplifier load circuit, or an open plate or screen grid by-pass condenser in the v.f. amplifier. Look for defect in the coils, condensers, resistors and leads of video i.f. and v.f. coupling units and in low-frequency compensating circuits.
23. Vertical retraces are visible in picture.	23. Brightness and contrast controls are not properly set, or signal intensity at C-R tube input is inadequate.	23. Lower the setting of the brightness control and advance the contrast (gain) control. If normal brilliancy cannot be secured without having retraces visible, check all video signal circuits for a defective part. Check antenna pickup and television signal strength at antenna location.
24. Insufficient contrast between light and dark portions of the picture.	24. Inadequate signal strength at input of C-R tube. Sound i.f. carrier may be beating with video i.f. carrier in video detector to give a strong 4.5 mc. signal which brightens entire picture. Defective C-R tube or d.c. restorer.	24. Advance the contrast (gain) control and readjust the brightness control. Check sound i.f. rejector circuit in video channel. Look for defect in d.c. restorer circuit. Try a new C-R tube.
25. Excessive contrast between light and dark portions of the picture.	25. Excessive signal strength at input of C-R tube, due to contrast (gain) control being advanced too far, excessive signal input to receiver.	25. Lower the contrast control setting. Lower any sensitivity controls which are present in receiver.
26. Objects at left and right sides of image or at center appear wider or narrower than normal.	26. Non-linear horizontal sweep.	26. Adjust bias on horizontal sweep output tube until trouble is eliminated. Check horizontal sawtooth sweep generator and horizontal linearity control circuit.
27. Bright vertical band along left side of picture.	27. Horizontal flyback time is too long. Picture signal is modulating electron beam as it approaches the left side of the picture during a slow horizontal retrace.	27. Look for a defective part in the horizontal sawtooth sweep generator, particularly the parts which govern flyback time. Check for excessive capacity between horizontal deflecting plate leads and chassis. In a gaseous triode sweep generator, the current-limiting resistor may be too large.
28. One or two wide dark horizontal bands on picture. If receiver and telecaster are on different power line systems, these bars may move slowly up or down.	28. Excessive power line a.c. hum or ripple in video amplifier.	28. Check filter condensers in video and C-R tube power packs for opens and loss of capacity. Check plate and screen-grid by-pass condensers in v.f. amplifier. Check v.f. tubes for cathode to heater shorts.
29. Many irregularly-positioned horizontal black and white bars or geometric patterns on picture.	29. Sound signals are getting into the video channel and causing "cross talk."	29. Readjust the vernier tuning control. Check the sound i.f. rejector circuit at the video i.f. input. Look for open by-pass condensers if a common power supply serves both sound and video sections.
30. A pattern of fine lines or short diagonal bars appears on the picture at irregular intervals, and may or may not move.	30. Excessive diathermy interference. Carrier of police, amateur or aircraft station beating with video carrier. Intermittent high-frequency oscillation in video channel of receiver.	30. Trouble is external interference if it disappears when a television signal generator is connected in place of the antenna. Try new antenna position, or use a directive antenna oriented for minimum interference.
31. Moving white and black splotches or spots on picture and momentary loss of either vertical or horizontal synchronization.	31. Ignition interference due to automobile or other equipment employing a spark coil for ignition.	31. Move antenna farther away from street, and rotate for a maximum signal-to-noise ratio. Use a directive antenna.
32. Snowstorm effect on entire picture.	32. Signal strength at receiver input is too low; to get a picture, gain must be advanced so far that normal atmospheric interference and tube hiss affects picture.	32. If reception was normal at one time and television transmitter has not been changed, check antenna system. Check tubes, parts and voltages in preselector stage and mixer-first detector stage.
33. Dark brown or black spot in center of picture.	33. Bombardment of center of C-R tube screen by ions which come from the electron gun but are not controlled by the deflecting systems, destroying the fluorescent material in this region.	33. Replace C-R tube.
34. Ghost images in picture.	34. Signals are arriving at the receiving antenna over two or more different paths from the telecaster. Signals are being reflected back and forth in the transmission line due to improper match. *(Continued on page 133)*	34. Change the position of the receiving antenna, or use a directive antenna so as to pick up signals over only one path. Match the receiver input to the transmission line.

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GENERAL DATA

In a suit of the Westinghouse Electric & Manufacturing Co. and Radio Corporation of America vs. Experimenters' Information Service, Inc., the following affidavit of Elmer E. Bucher, sales manager of the Radio Corporation of America was offered:

UNITED STATES DISTRICT COURT

Southern District of New York

Westinghouse Electric & Manufacturing Company and Radio Corporation of America, Plaintiffs, vs. Experimenters Information Service, Inc., Defendants.	In Equity No. 29/110

AFFIDAVIT OF ELMER E. BUCHER

State of New York } ss.:
County of New York }

ELMER E. BUCHER, being duly sworn, deposes and says, as follows:

I am manager of the Sales Department of the Radio Corporation of America, which is licensed under the three patents in suit, Fessenden No. 1,050,441, No. 1,050,728, Armstrong No. 1,113,149, and which is now selling, under such license, radio receiving sets of the super heterodyne type, containing the inventions of these patents. Our sales are directly and seriously affected by unlicensed infringers selling and offering for sale such receivers.

The development of efficient and satisfactory radio receiving apparatus is an extremely difficult and expensive undertaking. The radio art is not standardized but is rapidly advancing and the advances of one day are very apt to become obsolete within a very comparatively short time. The public demands, and is entitled to have, the very best that inventive and engineering skill can contribute. Moreover, it should be noted that the great increase in the number of broadcasting stations with the result of filling the air with many times the number of ether or radio waves has increased the necessity for a very select receiver. Formerly, there was a comparatively wide spread between transmitting stations operating at a given time but this is not true now. Also, the demands for distance reception have greatly increased, so that the average listener today is not content unless he can receive stations many thousands of miles away, and even those across the ocean.

In order to place before the public the best possible types of receiving apparatus, the Radio Corporation, Westinghouse and General Electric Companies have maintained thoroughly equipped research and experimental laboratories, where scientists and engineers are engaged in working on the many problems attendant upon the improvement of receiving apparatus. Many very valuable inventions have been made by those in the employ of these companies.

Furthermore, as in the case of Fessenden and Armstrong patents in suit, inventors entirely outside of the organization of these companies have been encouraged to devote their time and energies to the improvement of the radio art through the making of useful inventions. Many hundreds of thousands of dollars have been paid to such inventors for their patent rights. For example, Edwin H. Armstrong was a young student at Columbia University when he made the invention of his patent here in suit and which he later sold to the Westinghouse Company.

The super heterodyne set employs the best and regenerative principles of reception, utilizing usually six to eight tubes. Although the capabilities of this instrument had been recognized for some time, yet in its original form it was an extremely complicated device which introduced many serious and complex difficulties in its practical construction, which would not permit of quantity production. In addition, it possessed an undesirable feature in that it re-radiated energy, causing marked interference to the operation of neighboring radio broadcast receivers. Further, it required an excessive number of tubes to give the requisite sensitivity and volume of reproduction.

It was therefore necessary for our research forces to find a solution to three fundamental problems:

First—A reduction in the number of tubes without decreasing the sensitivity and volume of reproduction.

Second—The development of circuits and mechanical features which would permit the device to be put into quantity production.

Third—The elimination of radiation, i.e., interference to a neighboring receiving set.

We have felt that we should not offer super-heterodyne sets to the public until these engineering and production difficulties had been smoothed out, as not only would the high reputation generally of our products suffer but the great advantages of super heterodyne sets might not be fully appreciated. It has only been within the last few months that we have been able to advertise and put on the market Radiola of improved super heterodyne type.

There is a great demand today for selective and long distance reception. There are many types of sets, other than the super heterodyne, which are fairly good sets. That is, the listener can hear signals with varying degrees of intensity and clarity, but with some interference from undesired sources of radio waves. But the super heterodyne is regarded today as a supreme achievement in radio science. It is often termed "the Rolls Royce of Radio." We sell it as our highest-priced set, as appears from our current advertisements, a copy of one being attached hereto as Exhibit A.

If unprincipled infringers should be allowed to appropriate and use patented inventions without cost, it is obvious that expensive and highly specialized research and development organizations cannot be maintained. Also, that it would be futile to pay hundreds of thousands of dollars to outside inventors for their patent rights, if those rights were valueless. Although tremendous strides have been made, and a great deal accomplished in the perfecting of radio apparatus, there remains such to be done, which cannot be achieved without constant experimenting, testing and encouragement to inventors.

It is probably unnecessary for me to point out that many infringers are not only entirely irresponsible financially but are also incompetent to manufacture an efficient receiving set of the complicated nature of the super heterodyne. They have not the necessary engineering experience or ability. The result is that the purchaser of a super heterodyne from them finds that it is no better than sets of other types and may therefore think there is no real superiority in any super heterodyne, which is not true. The recognition of the merits of the super heterodyne is well pointed out in the affidavits of Messrs. Cockaday and Lynch in a suit in this court by the same plaintiffs against Morris Taub, copies of which affidavits I am attaching hereto for the convenience of the court as Exhibits B and C.

There is no adequate relief against such infringers as the present defendents other than an injunction. The damage to us and our distributors by such open and defiant infringement can never be accurately measured, in dollars and cents, even if a money judgment should eventually be collected which is certainly doubtful.

ELMER E. BUCHER.

Subscribed and sworn to before me this 13th day of June, 1924.

Francis S. Kane,

[L. S.] Notary Public.

Notary Public Queens Co. No. 578
Certificate Filed New York County
New York County Clerk's No. 380
New York Register's No. 6319
Commission Expires March 30, 1926.

It will be noted from the above affidavit that it is Mr. Bucher's sworn belief that "The public demands, and is entitled to have, the very best that inventive genius and engineering skill can contribute."

The writer believes that his design of super heterodyne known as the Model C-7 is superior to the Radiola super heterodyne in regard to quality of reproduction, volume, sensitiveness, quality of materials,

quality of workmanship and general appearance value and at least equal in regard to selectivity. If this is true, this Model C-7 super heterodyne should be available to the public who according to Mr. Bucher, is entitled to the best.

The writer is open to prove the above assertion and is ready to operate his Model C-7 super heterodyne in a comparative test against a Radiola super heterodyne operated by Mr. Bucher under identical conditions and before three competent disinterested judges, one to be selected by Mr. Bucher, one by the writer and a third judge mutually satisfactory to Mr. Bucher and the writer.

It is understood that if the writer is unable to prove his assertion he will pay $5,000 cash to any charitable institution the judges may name. If the writer is able to prove his case, he is ready to guarantee the Radio Corporation of America $100,000 yearly minimum royalty for a complete license to manufacture and market the Model C-7 super heterodyne for a period of five years. The royalty not to exceed 10% of the list price of the set.

In the above affidavit Mr. Bucher states "The radio art is not standardized but is rapidly advancing and the advances of one day are very apt to become obsolete within a very short time." This is very true but Mr. Bucher apparently does not believe that the public should know this, for quite to the contrary in a circular issued by the Radio Corporation of America's Sales Department, entitled "There's no Place Like Home" —with a Radiola, there is made the following statements: "The overwhelming demand for radio receivers, far in excess of manufacturers' anticipations, makes it advisable for the purchaser to exercise the utmost caution in order that his choice may assure him of complete and lasting efficiency. Thus only will his outlay prove a profitable investment. Those who secure the new RADIOLA RECEIVER (AR-1300) and DETECTOR-AMPLIFIER (AA-1400) are permanently equipped with apparatus embodying high standards—in design and quality of workmanship." Further on it continues "The design of the AR-1300 and AA-1400 units is identical with other units providing additional amplification, so that the capabilities of the equipment may increase step by step in a manner similar to the building up of a section bookcase without rendering the initial investment obsolete or detracting from the appearance of the installation."

These two units are no longer offered by the Radio Corporation of America and the people that did buy this receiver most certainly did not receive "complete and lasting efficiency," "prove a profitable investment" or are they "permanently equipped with apparatus embodying high standards." The fact that this model among others was withdrawn in favor of later models proves that the early models were not proving satisfactory.

Gimbel Brothers, a large department store in New York City, with other stores in Philadelphia and Milwaukee, whose total annual business is several times larger than the Radio Corporation of America, published some full page ads in the New York daily papers August 25, 1924. An extract from the ad is as follows:

YOU MAY WANT TO KNOW

Question—How many Radiola R. C. Sets were involved in the Gimbel sale of a year ago?

Answer—Beginning in July, 1923, Gimbels distributed over 25,000 R. C. Sets in a period of twenty-one days.

Question—How much did the R. C. Set sell for?

Answer—The R. C. Set sold for $79.75 complete with loud speaker. (With head phones and without loud speaker the price was $59.75.) CURRENT MARKET VALUE WAS $172.50.

Question—Are the R. C. Sets giving satisfaction?

Answer—They are, except that several new and powerful broadcasting stations in the heart of the city make it almost impossible to hear one station without interference from others, except by the addition of cumbersome extra equipment—wave traps and the like. The R. C. Set gives very clear and very loud signals, but often from several stations at the same time.

As early as April, 1923, the Experimenters Information Service were exclusively advocating the Model C Super Heterodyne and pointing out the disadvantages of the Single Circuit and ordinary regenerative receivers. At the same time the Radio Corporation of America were marketing single circuit receivers, principally most models of which have since been withdrawn. For comparative example of results obtained a Mr. Levy, at Wellington, New Zealand, is operating an eight-tube Model C Super Heterodyne and has been obtaining consistent loud speaker reception from KGO Oakland, Cal., a distance of over 6,000 miles and uses only a loop.

The Blue Prints of the Model C Super Heterodyne were the first complete constructional details of the Super Heterodyne offered to the public. A few suspicious experimenters built Model C's from the Blue Prints and the results obtained were so far in advance of those obtained with the old single circuit and regenerative receivers, that the tremendous success of the Model C was as rapid as wild fire. The many grateful testimonial letters from Model C customers in the files of the Experimenters Information Service prove conclusively that they won the hearts of the advanced experimenter.

In one of the first Radio Corporation of America catalogs they listed a radio frequency transformer known as the UV1716. This transformer was advertised for sale as a long wave radio frequency amplifying transformer and as the number of experimenters that tinker with long wave reception is very limited the demand for this transformer was comparatively small. Dealers that had some in stock did not know when they would dispose of them. About April, 1923, the Model C Blue Prints came out and these specified three of these UV1716 Transformers as part of the design.

In a few months all the available UV1716 transformers had been bought up. The Experimenters Information Service at that time handled radio parts as dealers and they ordered large quantities of these transformers through their jobber. At a time when we had standing orders for several thousand of these transformers the Radio Corporation of America apparently decided that they would not sell any more to the Experimenters Information Service, as they would not deliver to their jobber. However, it is a known fact that although Experimenters Information Service orders were in first, their jobber was not supplied, although other jobbers were supplied. Similar transformers made by other manufacturers soon relieved the situation. It was nearly a year from this date before the R. C. A. brought out their Radiola Super-Heterodyne.

In the current Radio Corporation Catalog entitled "Radiolas," section 3 of the Patent Notice reads as follows:

"(3) To meet and develop the interest of amateurs in the radio art, such amateurs are, until further notice, authorized under the patents under which the Radio Corporation of America has the right to grant licenses, to assemble and use sets (but only for amateur and experimental radio purposes as stated above defined in section (1), providing the tubes forming elements of, or used with, such sets have been sold by the Radio Corporation of America or such other persons, if any, as have been authorized by it to manufacture and sell the same for use in the United States of America, and providing that such amateur does not use any assembled or partially assembled set, but himself assembles the various distinct parts."

Section (1) reads as follows:

"(1) Purchasers of tubes, grid leaks, transformers, condensers, or other parts, or of sets are not licensed by the Radio Corporation of America under any patents owned by the Radio Corporation of America, or under which it is licensed to use the same for commercial purposes. The sole license the purchaser of any set obtains by the purchase thereof is to use it for amateur and experimental radio use involving no feature and including broadcast reception of news and music and other entertainments but not broadcast transmission."

According to the above, an amateur or experimenter may buy parts and assemble them and combine circuits the patents of which are controlled by the Radio Corporation of America, and enjoy experimental and broadcast reception. The sole purpose of the Experimenters Information Service is to show the experimenter and amateur how to assemble these various parts to obtain the high possible results with the least worry and expense and having succeeded in accomplishing this for a large clientele their policy will remain unchanged. Reliable statistics show that over 50% of all radio sales are parts and it is therefor realized that a competent information service is a welcome guiding hand

for the experimenter and amateur, and in this respect the Experimenters Information Service hold a unique and solitary position in the radio industry.

A few of the many unsolicited letters from strangers confirming this statement are reproduced for consideration.

Mr. Bucher's sworn affidavit referring to the early form of superheterodynes, says, "In addition, it possessed an undesirable feature in that it re-radiated energy, causing marked interference to the neighboring radio broadcast receivers." Re-radiation from a receiver means that the receiver picks up radiation and re-radiates it, and without any exception this can happen in any receiver to some extent and cannot be eliminated or is there any reason to try and prevent it.

Further on in the same affidavit Mr. Bucher states it was necessary for the Radio Corporation of America research forces to find a solution to three fundamental problems, one of which was as follows:

"Third—The elimination of radiation, i.e., interference to a neighboring receiving set."

This fundamental problem has most certainly not been solved in the current Radiola Super-Heterodyne, as it does radiate energy and will interfere with neighboring receivers contrary to their statements otherwise. The oscillator tube in Radiola Super-Heterodyne is coupled inductively to the loop and this loop radiates energy of considerable magnitude at the fundamental wavelength and harmonics. The oscillator coupler or inductances of the Radiola Super-Heterodyne are not shielded and they radiate energy directly which would alone cause interference with neighboring sets due to the oscillator oscillating at harmonics also. Two Radiola Super-Heterodynes operated in the same building can cause considerable interference between themselves. The situation of a New York Apartment house containing several sets can well be imagined.

The Radiola Super-Heterodyne is operated on the "second harmonic" principle which gives the advantage of being able to use one tube for both the local oscillator and first detector, and also gives some disadvantages. In this second harmonic system, if it is desired to tune to a 300 meter station, the oscillator must be tuned to slightly above or below 600 meters and the second harmonic of the oscillator (slightly above or below 300 meters) heterodynes the signal through the amplifying system. The loop is tuned to 300 meters. Now while the system is tuned to 300 meters and the 300 meter station may be heard, the oscillator working at the fundamental wavelength of 600 meters will heterodyne through 600 meter stations which are the powerful ship and shore telegraph stations that cause considerable interference.

Suppose again that we have one of these Radiola Super-Heterodynes in St. Louis and we wish to receive a 273 meter New York station. The wavelength of the St. Louis station KSD is 546 meters. To tune to the 273 meter New York station, the oscillator system must be adjusted to slightly above or below 546 meters and it is then found that the local 546 meter station is heterodyne through and it is impossible to tune in the 273 meter station while the St. Louis station is on.

Likewise with a Radiola Super-Heterodyne located in New York City as soon as it is tuned to wavelengths approximately 226, 246 or 263 meters, it is found that WJZ, WEAF and WNYC (455, 492 and 526 meters respectively) are found in an entirely separate calibration space on the dials than from their proper position, and that the shorter wavelengths above mentioned cannot be received without interference from the New York stations. This disadvantage is not found in the Model C and C-7 Super-Heterodynes when used over the broadcast wavelength range.

In the January, 1923, issue of "Radio News," page 1393, is an advertisement of the Model "L" 10-tube Super-Heterodyne and the Blue Print designs of this advanced receiver were available and recommended several months previous to date. "Radio News" is recognized as the leading radio advertising medium yet in that same issue there is not another single advertisement of any concern or individual advocating or recommending the Super-Heterodyne method of reception. This only points out that no one else realized the field for this type of receiver. The Radio Corporation during that month were selling a series of models which have long since been discontinued.

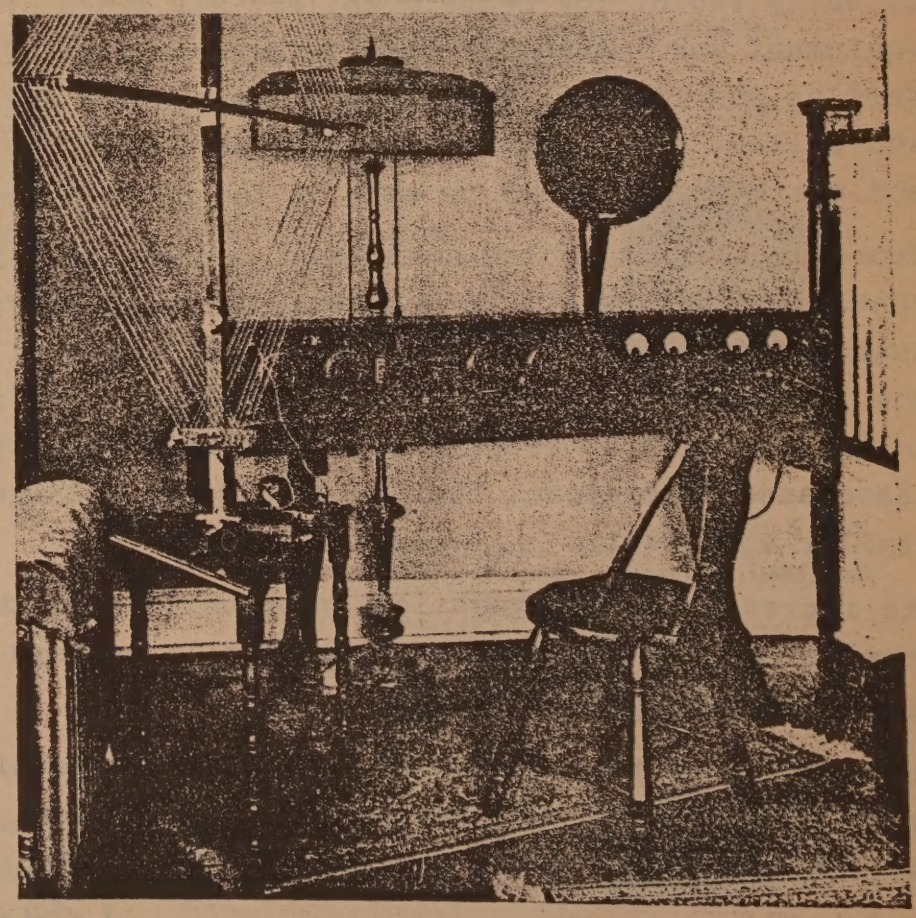
The July, 1923, issue of "Radio News" (14 months ago), carried the first advertisement of the now famous Model "C" Super-Heterodyne Blue Print designs. In that issue not another receiver was advertised that can compare with the Model "C" in performance, and with perhaps one exception all the sets advertised at that time are now off the market and obsolete while the Model "C" built in strict accordance with the Experimenters Blue Prints is still superior to any finished set on the market today including the Radiola Super-Heterodyne, and is only exceeded in performance by the Experimenters C-7 design. The best set offered by the Radio Corporation was the "Radiola Grand" and the writer suggests that the reader take Packard's advise and "ask the man who owns one." In March, 1924, issue "Radio News" Radio Corporation made first public announcement of the coming Radiola Super-Heterodynes, over 14 months after Experimenters started advocating this system, and 8 months of the introduction of the Model "C."

Although Experimenters advertised the Super-Heterodyne designs for 14 months previous to the introduction of the Radiola Super-Heterodyne, the Radio Corporation over that long period never questioned our implied patent license to conduct such a service. Immediately after they were prepared to market a competing instrument, Experimenters Information Service were suited. The fact seems that the Radio Corporation was contented to let Experimenters rub the rough spots off the field, let them introduce the Super-Heterodyne and that advertising would eventually accummulate in the Radio Corporation's favor.

Radiola Regeneflex is one of the new Radio Corporation Models and sells for $150 and the writer has been unable to make it compare with the Pliodyne 6 for selectivity, volume, range, quality of reproduction, simplicity. The Pliodyne 6 only costs $95 and is non-reflexed, and non-regenerating.

In the November, 1923, issue of "Q. S. T.," an article by C. D. Tuska on "The Superdyne Receiver," insinuates that on some stations better results were obtained on the four-tube Superdyne than on an 8-tube Super-Heterodyne. If Mr. Tuska believes this to be a fact and does not realize that such a comparison is ridiculous, the writer will be pleased to enter a Model C-7 seven-tube Super-Heterodyne against the finest four-tube Superdyne Mr. Tuska ever set hands on and will guarantee to exceed the Superdyne's performance in any respect. The writer would prefer to make the test in New York City close to lots of interference.

Abstract from "New York American," September 25, 1924:



Super-Heterodyne Installation consisting of Model C with Model J Two-Stage Direct Radio Frequency Amplifier, arranged for Loop or Antenna. Western Electric 10D Loud Speaker.

LETTERS

The Horn Speaker Editor:

Some writer said, A thing of beauty is a joy forever"! This mirrored my thoughts every time I examine my recently acquired model 48 United American Bosch cabinet model 7 tube radio. But, I need help from some of the readers.

I'd like a drawing or a photograph such as you used on page 5 of the February issue of THE HORN SPEAKER or perhap a copy of a page advertisement such as might have been used in THE SATURDAY EVENING POST of 1929 when this set came out.

(Continued on page 8)

The Antique Radio Club of America Inc.

James L. Troe
(201) 539-8943

111 Skyline Drive
Morristown, NJ 07960

March 25, 1986

NEWS RELEASE

FOR IMMEDIATE RELEASE

ANTIQUE RADIO COLLECTORS AND HISTORIANS TO HOLD ANNUAL CONVENTION

The Antique Radio Club of America (ARCA) will hold a convention at Louisville, Kentucky during June 11 thru 14, 1986 to which all interested people are invited.

The Club has about 1000 members who collect and restore antique wireless and radio equipment and who study and record the history of early radio. The members collect all types of radio and related equipment and literature from before World War I to sets of the forties and fifties. Many of the members are amateur radio operators who collect early "Ham Radio" equipment from early crystal receivers and spark transmitters to sets of the sixties.

Once a year ARCA holds a national convention. During this years convention there will be speakers, tours of radio collections, and tours of the Louisville area. As usual, there will be a program for the ladies. Major events will be a massive flea market, where the collectors will be looking to buy or sell sets, parts, tubes, and associated literature! There will also be a large auction of similar equipment.

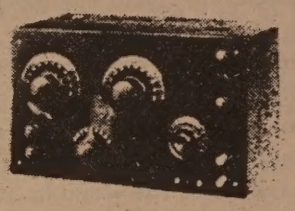
The recreational and vacation opportunities in the Louisville area provide endless choices for those family members whose interests do not include "old radios".

Information on the convention and ARCA membership can be obtained by writing to ARCA, 81 Steeplechase Road, Devon, PA, 19333 or calling 215-688-2976.

J.L.Troe
President

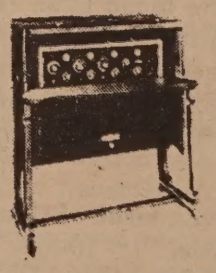
CONTINUED FROM LAST MONTH.

TRADE NAME: Concert Junior.
TYPE: Crystal set.
CONTROLS: One.
AERIAL: Outdoor.
PRICE: $3.50 without accessories.
MANUFACTURER'S NAME: The Concert Radio Phone Co.



TRADE NAME: Concert Monotube.
TYPE: Three circuit regenerative.
TUBES: One.
CONTROLS: Three.
BATTERIES: Not furnished.
AERIAL: Outdoor.
PRICE: $12.50 without accessories.
MANUFACTURER'S NAME: The Concert Radio Phone Co.

TRADE NAME: Concert Tritube.
TYPE: Three circuit regenerative with two stages of audio frequency.
TUBES: Three.
BATTERIES: Not furnished.
CONTROLS: Three.
AERIAL: Outdoor.
PRICE: $35.00 without accessories.
MANUFACTURER'S NAME: The Concert Radio Phone Co.



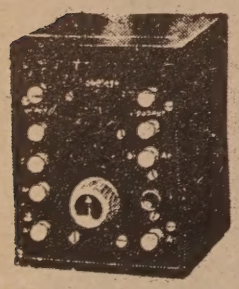
TRADE NAME: "Console Receiver."
MODEL: 6-C.
TYPE: Tuned radio frequency.
TUBES: Six.
BATTERIES: Contained in cabinet.
CONTROLS: Three.
AERIAL: Indoor or outdoor.
PRICE: $220.00 without accessories.
MANUFACTURER'S NAME: Benson Engineering Co.

TRADE NAME: "Console with Duo Dyne Receiver 770."
MODEL: 772.
TYPE: Same as the 770 receiver with built-in loud speaker.
TUBES: Four.
BATTERIES: None furnished, but may be self-contained.
CONTROLS: Three.
AERIAL: Indoor or outdoor.
PRICE: $140.00 without accessories.
MANUFACTURER'S NAME: Globe Electric Company.

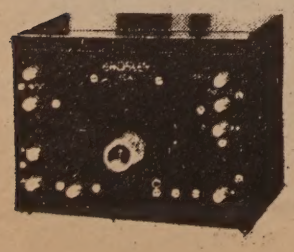
TRADE NAME: "Console with Duo-Dyne Receiver 900."
MODEL: 902.
TYPE: Same as Model 900 with Magnavox built-in loud speaker.
TUBES: Five.
BATTERIES: furnished,

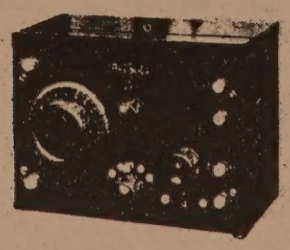
CONTROLS: Three.
AERIAL: Indoor or outdoor.
PRICE: $310.00
MANUFACTURER'S NAME: Globe Electric Company.

TRADE NAME: "Crosley Amplifier."
MODEL: 51-A.
TYPE: Audio frequency amplifier.
TUBES: One.
BATTERIES: None furnished.
PRICE: $14.00.
MANUFACTURER'S NAME: Crosley Radio Corp.

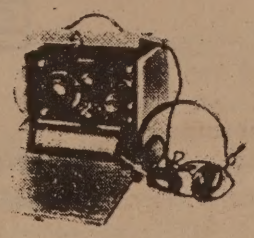


TRADE NAME: "Crosley Amplifier."
MODEL: 50-A.
TYPE: Two-stage audio frequency amplifier.
TUBES: Two.
BATTERIES: None furnished.
PRICE: $18.00.
MANUFACTURER'S NAME: Crosley Radio Corp.

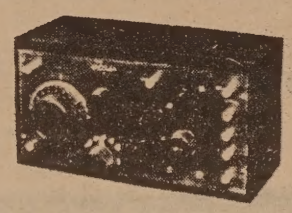




TRADE NAME: "Crosley Regenerative."
MODEL: 50.
TYPE: Armstrong regenerative.
TUBES: One.
BATTERIES: None furnished.
CONTROLS: Two.
AERIAL: Outdoor.
PRICE: $14.50 without accessories.
MANUFACTURER'S NAME: Crosley Radio Corp.



TRADE NAME: "Crosley Regenerative Portable."
MODEL: 50-P.
TYPE: Armstrong regenerative.
TUBES: One.
BATTERIES: Dry cell, self-contained.
CONTROLS: Two.
AERIAL: Outdoor.
PRICE: $16.00 without accessories.
MANUFACTURER'S NAME: Crosley Radio Corp.

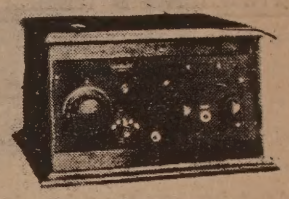


TRADE NAME: "Crosley Regenerative Receiver."
MODEL: 51.
TYPE: Armstrong regenerative.
TUBES: Two.
BATTERIES: None furnished.
CONTROLS: Two.
AERIAL: Outdoor.
PRICE: $18.50 without accessories.
MANUFACTURER'S NAME: Crosley Radio Corp.

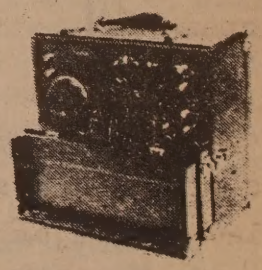
TRADE NAME: "Crosley Regenerative Receiver."
MODEL: 51 special.
TYPE: Armstrong regenerative.
TUBES: Two.
BATTERIES: None furnished, but may be contained in cabinet.
CONTROLS: Two.
AERIAL: Outdoor.
PRICE: $23.50 without accessories.
MANUFACTURER'S NAME: Crosley Radio Corp.

TRADE NAME: "Crosley Regenerative Receiver."
MODEL: 512.
TYPE: Armstrong regenerative.
TUBES: Three.
BATTERIES: None furnished.
CONTROLS: Two.
AERIAL: Outdoor.
PRICE: $30.00 without accessories.
MANUFACTURER'S NAME: Crosley Radio Corp.

TRADE NAME: "Crosley Regenerative Receiver."
MODEL: 52 special.
TYPE: Armstrong regenerative.
TUBES: Three.
BATTERIES: Not furnished, but can be contained in cabinet.
CONTROLS: Two.
AERIAL: Outdoor.
PRICE: $35.00 without accessories.
MANUFACTURER'S NAME: Crosley Radio Corp.



TRADE NAME: "Crosley Regenerative Receiver, Portable."
MODEL: 51-P.
TYPE: Armstrong regenerative.
TUBES: Two.
BATTERIES: Self-contained in cabinet.
CONTROLS: Two.
AERIAL: Outdoor.
PRICE: $23.50.
MANUFACTURER'S NAME: Crosley Radio Corp.



TRADE NAME: "Crosley Trirdyn."
TYPE: Armstrong regenerative; reflex and tuned radio frequency.
TUBES: Three.
BATTERIES: Not furnished.
CONTROLS: Three.
AERIAL: Outdoor or indoor.
PRICE: $50.00 without accessories.
MANUFACTURER'S NAME: Crosley Radio Corp.

TO BE CONTINUED.

This set is 42 inches tall, 28 inches long and 14 inches wide. It has a 10 inch Bosch dynamic speaker, which thanks to some judicious use of Elmer's glue is tight as a drum and ready to use. Tubes, in order from the back of the set and looking to the front, are left to right, 224, 224, 224, 227, 245, 245 and 280.

I'm missing some control wooden knobs and there is a hole in the front panel with nothing in it. I suppose it may be for the tuning knob but haven't explored the set fully as yet. It would help if someone who has such a set would write to me about it.

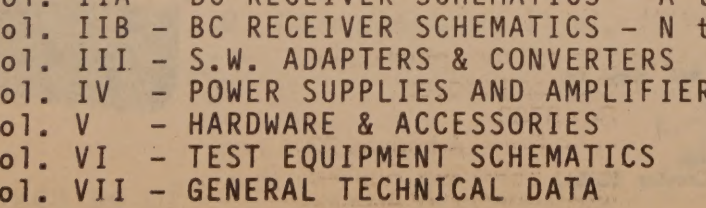
I found a schematic of a whole bunch of Bosch radios including one for this model 48 in my Rider's Abriged Volumes I through V. The Bosch material is listed under United American Bosch, not just Bosch.

For the record I continue to find Puett Electronics which advertises heavily in THE HORN SPEAKER of real value to me in the occasional jams in which I find myself. The company isn't too big to handle things on a more personal basis. (Ed., we have missed Puett's ads the last two editions) Other advertisers help too!

If you run this please list my 1405 W. 9th Avenue, Stillwater, Oklahoma 74074 address. I believe we can pep up our radio hobby enjoyment if we can induce people to write to each other more.

Sincerely,
John W. Hamilton

Editor's note.... I am looking for more subscibers so that I can increase the size of THE HORN SPEAKER and get in more of my backlog of letters.



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Reservations:
1-312-695-5000; mention Radiofest '86 for special rates

For more information write:
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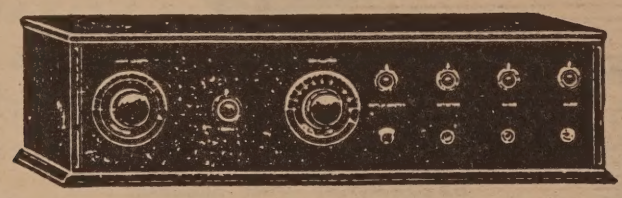
P.O. Box 14732, Chicago, IL 60614

THE OLDE TYME RADIO COMPANY

2445 LYTTONSVILLE ROAD, SILVER SPRING, MD 20910
Phone (301) 585-8776



THE VINTAGE RADIO IDENTIFICATION SKETCH BOOKS of D. H. Moore - eight uniform volumes - are truly unique in modern vintage radio literature, as they answer questions previously without answer and much more. The operative word in the title is IDENTIFICATION - original schematics faithfully reproduced, component values, constructional details, trouble-shooting, operational procedures, physical configuration, historical and biographical data. A wealth of fascinating, useful information you will not find elsewhere. The following titles indicate the scope of the work:

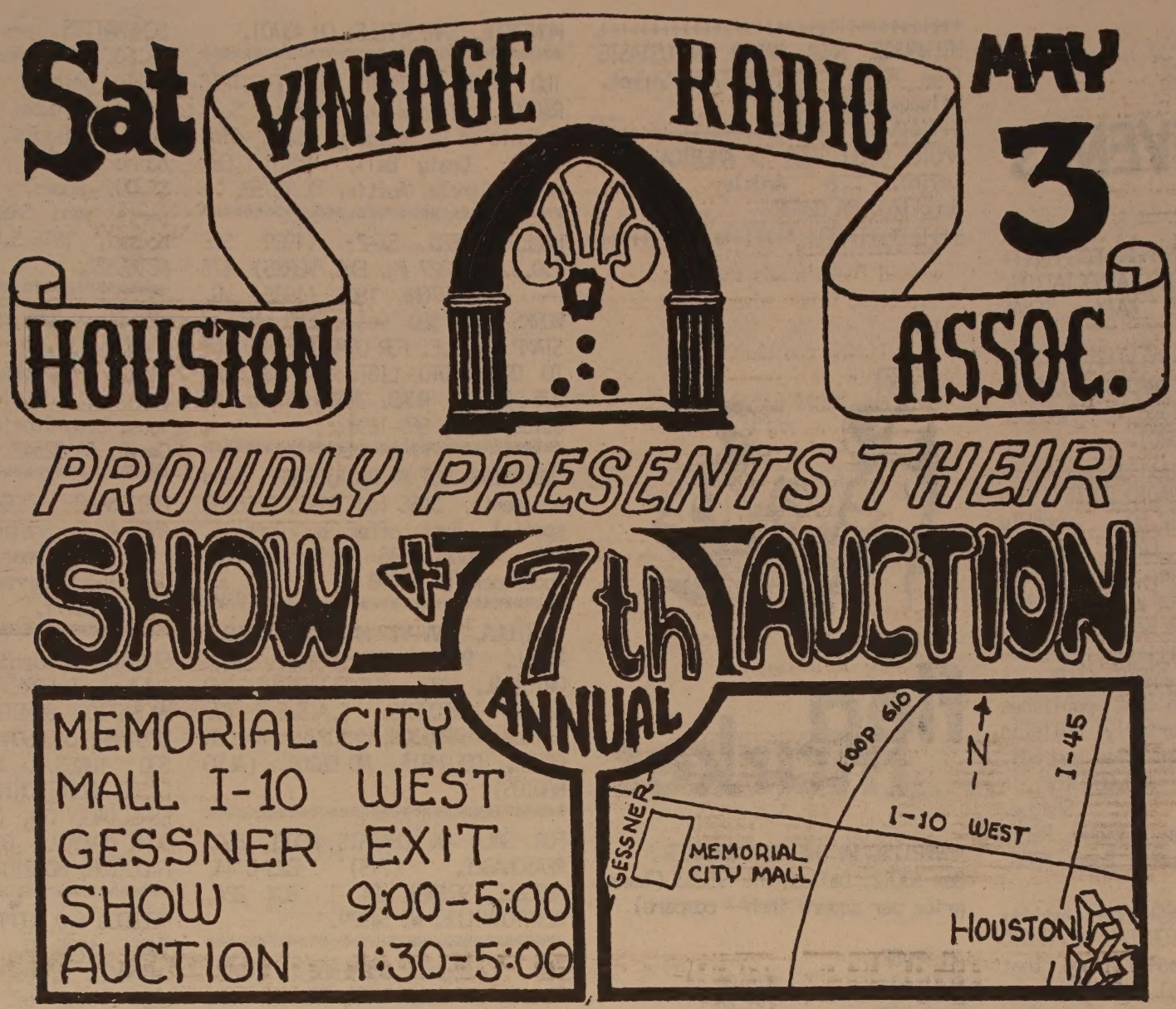
Vol. I - INTRODUCTORY ESSAYS
Vol. IIA - BC RECEIVER SCHEMATICS - A to M
Vol. IIB - BC RECEIVER SCHEMATICS - N to Z
Vol. III - S.W. ADAPTERS & CONVERTERS
Vol. IV - POWER SUPPLIES AND AMPLIFIERS
Vol. V - HARDWARE & ACCESSORIES
Vol. VI - TEST EQUIPMENT SCHEMATICS
vol. VII - GENERAL TECHNICAL DATA

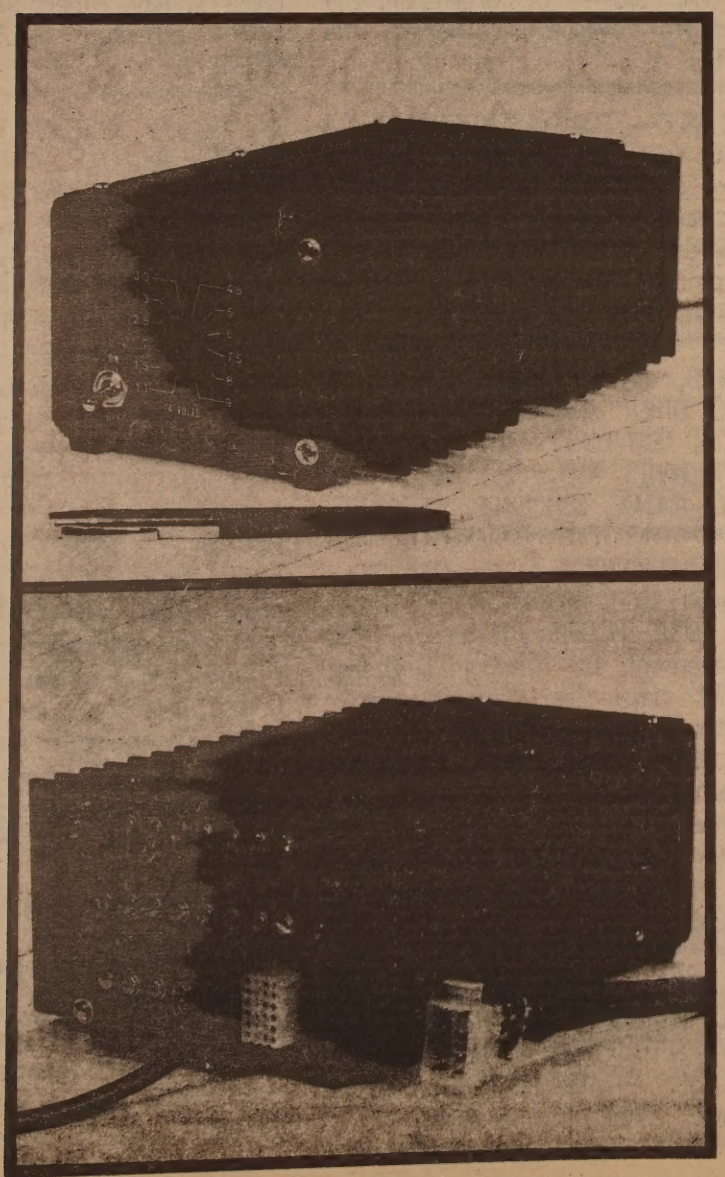
Practically all of the "orphan" sets ignored by all the usual references will be found documented here, including marques forgotten or rarely heard of today; such as Acme, Aero, Bruno, Flewelling, Loftin-White, Doerle, and Try-Mo, Lacault (Ultradyne), Victoreen, Madison-Moore, Erla, Rauland, Bosch and many more. Also included are forgotten circuits of such marques as RCA, Crosley, A-K, DeForest, etc.

THE VINTAGE RADIO IDENTIFICATION SKETCHBOOKS OF D. H. Moore are being printed in a limited edition of 100 complete sets of eight volumes each, of uniform presentation, Velo-bound, photo-offset. Each volume and set is numbered and autographed and may be purchased in single volumes or as a complete set. Individual volumes are being offered at a price of $15.00 each and the complete set for $100.00, postpaid.

Order your set now while the supply lasts.
To order send check or money order to:

The Olde Tyme Radio Company
2445 Lyttonsville Road
Silver Spring, MD 20910





UNIVERSAL POWER SUPPLY FOR ANTIQUE RADIOS

The Model H10A is a premium quality regulated power supply designed to power over 99% of all battery operated radios. It was developed primarily for the radio collector and is capable of operating all battery sets manufactured between 1920 and the end of the vacuum tube era which was around 1960.

The Model H10A contains three independent and electrically isolated regulated power supplies:

The "A" output provides one of twelve (12) switch selectable outputs: 1.1, 1.5, 2.0, 2.5, 3.0, 3.3, 4.5, 5.0, 6.0, 7.5, 8.0, and 9 volts; at 5 and 6V the H10A is rated at 5 Amp.

The "B" voltages of 22.5, 45, 67.5, 90, and 135V may be used in any combination with a rating of 50 mA.

"C" voltages of 1.5, 3.0, 4.5, 9, 10.5, 13.5, 16.5, and 22.5.

All outputs feature automatic electronic short circuit protection and very low ripple. The H10A operates from 117VAC 50-60HZ. Price is $159.95 UPS prepaid in U.S.A. Canadian customers please add $5.00.

Write or call for Specifications:

Thomas Burgess
Box 9769
Little Rock, Arkansas 72219
(501) 568-1995 Business Phone
(501) 565-1750 Evenings

SOCIAL EVENTS

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HOUSTON VINTAGE RADIO ASSOCIATION, 6110 PECAN LANE, KATY, TEXAS 77449.

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INDIANA HISTORICAL RADIO SOCIETY, 245 N. Oakland Avenue, Indianapolis, IN 46201.

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NORTHWEST VINTAGE RADIO SOCIETY — Annual dues $12.50. monthly newsletter, THE CALL LETTER. Write: Ed Charman, Northwest Vintage Radio Society, P. O. box 02379, Portland, OR 97202.

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ARIZONA ANTIQUE RADIO CLUB, a lately formed club that publishes RADIO NEWS, a quarterly bulletin with informative articles and ads. Annual dues are: $10.00 for a year. Write: Lee Sharpe, treasurer, Arizona Antique Radio Club, 2224 W. Desert Cove #205, Phoenix, AZ 85029.

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CALIFORNIA HISTORICAL RADIO SOCIETY is a popular group that publishes a journal six times a year and provides swap meets four times a year for its members. CHRS, P. O. Box 1147, Mountain View, CA 94042-1147.

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SEND IN YOUR CLUB NEWS — EARLY

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MID-AMERICA ANTIQUE RADIO CLUB, 9723 CARTER DRIVE, OVERLAND PARK, KANSAS 68212.

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VINTAGE RADIO AND PHONOGRAPH SOCIETY, an organization that is famous for its yearly conventions in the Dallas area. Also it publishes a journal approximately six times a year. Both phonograph and radio collectors are invited to join this society from all over the country. Dues are $13.50 a year. Write: Vintage Radio and Phonograph society, P. O. Box 165345, Irving, TX 75016.

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THE SOCIETY TO PRESERVE AND ENCOURAGE RADIO DRAMA VARIETY AND COMEDY, P.O. BOX 1587, HOLLYWOOD, CALIFORNIA, 90078.

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THE SEVENTH ANNUAL HVRA SHOW AND AUCTION will be on Saturday, May 3, at Memorial City Shopping Center. Mark your calendar and plan to attend, for this is truly a grand day and event. Interested? If so, contact HVRA at 6110 Pecan Lane, Katy, TX 77449.

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MILWAUKEE AREA RADIO ENTHUSIASTS (Ken Pabst), 4441 N 77th Street, Milwaukee, WI 53218

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RADIO COLLECTORS OF AMERICA (bob Levin), 8 Ardsley Circle, Brockton, MA 02402

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flea market

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Box 53012, Dallas, TX 75253 (lower price per square inch— compare)

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Full page	$75.00
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CLASSIFIED ADS .. 15 cents a word. (first 20 words free)
PHOTO ADS ..... $5.00 extra.

SALE

****

OVER 200 BATTERY and AC radios. Send large S A S E with two stamps for list. Donald Juleen, 6250 Ledge Road, Sturgeon Bay, WI 54235. Phone 1-414-743-7922.

****

FOR SALE: PHILCO, AK CATHEDRALS, 2 BELMONT TOMBSTONES, ZENITH 705, crosley fivers, arvin phanton baby, SEVERAL COLORED PLASTICS, ARVIN & SILVERTONE TINY METAL SETS, MORE. SASE FOR LIST. ED RIPLEY, 2276 HOLLOWAY AVENUE, MAPLEWOOD, MN 55109.

****

TUBES NOS IN ORIG. BOX $1.00 EA. 6SF5, 6SA7, 6W4, 6AX5, 12SK7, 12SQ7, 25L6, 50A5, MIX OR MATCH. NO CHOICE AS TO GLASS OR METAL. MIM. ORDER 20 P.Pd. — RIDERS RADIO MANUALS VOL.s 7 THROUGH 14 12.00 P.Pd. EA. SASE FOR PARTS AND TUBE LIST. CHESTER ENGLAND, 98 MONTAGUE, ZANESVILLE, OH 43701.

****

100 PLUS BATTERY AND ELECTRIC RADIOS, cylinder phonographs, Sell as unit or by category. LSASE plus $3.00. Craig Ball, 10101 Oak Hollow Circle, Austin, TX 78758.

****

HALLICRAFTERS SX-2 (1939 SEE F.O.S. PG 227 #5, EXC, WORKS) $75 — SILVERTONE 1805 (1935, VG, WORKS WELL) $80 —— SEND LARGE 2 STAMP S.A.S.E. FOR COMPLETE AND UP TO DATE PHOTO LIST. RON BOUCHER, 376 CILLEY ROAD, MANCHESTER, NH 03103, (603) 669-1698.

****

"CLEANING OUT MY RADIO STUFF. Send 40 cents, SASE for list. Nothing special. Best offer by June 1, 1986. W2GHF, 45 Allen Drive, Woodstock, NY 12498

****

VICTROLA, VV-VI MAHOGANY TABLE MODEL, PLAYS EXCELLENTLY, ALL ORIGINAL, $85. CONVENTIONAL AND EDISON RECORDS. S.A.S.E. TO: ARTHUR HARRISON, 1021 FALCON DRIVE, COLUMBIA, MO 65201. (ALSO RADIOS)

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FOR SALE AK CHASSIS MODEL 55C, REASONABLE, (715) 823-6744, RUSSELL SCHOEN, RT 1 BOX 224, CLINTONVILLE, WI 54929.

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FOR SALE: NORMENDE RADIO, Tannhauser model, AM, FM, SW, LW. Also, Zenith portable, Wavemagnet, AM, FM, SW.— D. Greenspan, 269 Garfield Avenue, Oakhurst, NJ 07755.

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FOR SALE — 200 PLASTIC/BAKELITE 4 or 5 tube small radios as removed from a closed up repair shop. Use for parts or repair them. Sold as removed. 3 for $10.00 plus U.P.S. shipping. Krantz, 100 Osage Avenue, Somerdale, NJ 08083.

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RIDERS, HOWARD SAMS, RCA, PHILCO PLUS OTHER SERVICE DATA. TUBES PARTS, TEST EQPT. SASE FOR LIST. WRITE WANTS AND SASE. KRANTZ, 100 OSAGE AVENUE, SOMERDALE, NJ 08083.

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FOR SALE, RIDERS, HOWARD SAMS, RCA, PHILCO, PLUS OTHER SERVICE DATA. SETS, PARTS, TUBES. LIST FOR S.A.S.E. — KRANTZ, 100 OSAGE AVENUE, SOMERDALE, NJ 08083.

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SCHEMATICS — RADIO $1.25, TV $3.50. Give make and model number. Newly printed tube manuals of antique tubes containing tube characteristics, pin diagrams, VT numbers and substitution guide $5.00. Books, tubes and other parts send SASE for list. Willis Housel, 1816 S.W. 12th, Lincoln, NE 68522.

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CRYSTAL, TUBE EXPERIMENTER'S catalog - $1.00 - None free. sets, kits, handbooks, plans, coils, supplies, obsolete tube quotations. Laboratories, 1477-H, Garden Grove, CA 92642.

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FOR SALE — CATHEDRAL, BATTERY, AND A. C. radio. Photo list four times per year. Send S.A.S.E. to J. Albert Warren, Box 279, Waverly, PA 18471.

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SPARTON AC62, PHILCO 95, AK 86, AK 185A, DeFOREST DT700, ROGERS MAJESTIC, BENDIX 115, AK-H HORN SPEAKER, JACKSON TUBE TESTER 648, 500 TUBES... WANT: EARLY WOOD CASED ELECTRONIC TEST EQUIPMENT, ESPECIALLY OAK CASED OSCILLOSCOPE. JOHN KENDALL, 600 REMINGTON ROAD, FALLSTON, MD 21047.

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KELLOGG 510 COMPLETE WITH KELLOGG TUBES $195.00. Deforest F5 with Deforest tubes like picture October issue of THE HORN SPEAKER $250.00. .... WANT Ozarka V16 chassis, Ray Miner, 1215 Avenue B, Fort Madison, IA 52627. (319) 372-1271.

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AK, CROSLEY, STEWART WARNER TOMBSTONES, PHILCO, JAX, GLORITONE CATHEDRALS. INTERESTING ART DECO WOOD PLASTICS. SASE for big list. Edward Ripley, 2276 Holloway Avenue, Maplewood, MN 55109.

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10 BOOKS, JOHN RIDERS — I to V - VI to XIV, 30 speaker or phone jacks for old battery radios. Russell Schoen, Route 1 Box 224, Clintonville, WI 54929.

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FOR SALE: TUBES, 1R5, 1U4, 1U5, 5AQ5, 5BE8, 5DT8, 6BC5, 6CQ8, 6EB8, 12AU6, All N.O.S. in original boxes and name brands. 10 for $15.00 p.pd. in the 48 states. No C.O.D. please. You may mix or match. Rider radio manuals vol.s 8 through 14, these are in very good condition. $10.00 each p.pd. Parts and tube list available in late February. C. F. ENGLAND, 98 Montague Avenue South, Zanesville, OH 43701.

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1 PHILCO CATHEDRAL MODEL 50, 1 Philco cathedral model 60, 1 Philco cathedral model 3784, 1 AK cathedral model 84, .. Russ Schoen, R # 1, Clintonville, WI 54929.

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HEATHKIT TEST EQUIPMENT 1940's tube type and color bar generator F.M. sweep generator, television alignment generator. .. Charles Kaelber, P. O. Box 3335, Spring Hill, FL 33526. Phone (904) 683-7202.

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RIDERS RADIO AND TV SEVICE MANUALS, RCA, PHILCO, HOWARD SAMS, FOLDERS AND BOUND VOLUMES. RADIO TUBE TESTERS, SIGNAL GENERATORS, TUBES, PARTS, VOLUME CONTROLS, KNOBS, LIST FOR SASE. 100'S OF OTHER UNLISTED ITEMS, BOOKS, WRITE WANTS, SASE FOR REPLY. KRANTZ, 100 OSAGE AVENUE, SOMERDALE, NJ 08083.

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FOR SALE: BALLAST TUBE HANDBOOK-58 PAGES OF TECHNICAL DATA, LISTS WELL OVER 1800 TUBES, AMERICAN AND EUROPEAN, $7.50 POSTPAID IN U.S.A. ANTHONY JACOBI, 8053 MAYWOOD, RALSTON, NE 68127. U.S.A.

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1 REMLER RECEIVER.. A GEM IN EXCELLENT CONDITION. CONTAINS 8 '99" TUBES. WHICH ARE LISTED AT $45.00 EACH. WILL SELL FOR $300.00 PLUS SHIPPING BY U.P.S. — 1 THERMIODYNE T.F.6 RECEIVER .. BEAUTIFUL SCARCE SET. CONTAINS TUBES... LIKE NEW INSIDE. WILL SELL FOR $300.00 PLUS SHIPPING... VIA U.P.S. — 1 DAY FAN WITH TUBES... BEAUTIFUL SET.. MINT.. WILL SELL FOR $200.00 PLUS SHIPPING. —— ALSO HAVE SEVERAL OTHER SETS IN VARIOUS KINDS OF CONDITION.. SUCH AS: GLOBE.. A. KS.. FREED EISMAN... ALSO SEVERAL OLD SPEAKERS.. RADIO TEST EQUIPMENT AND OLD CABINETS INC CATHEDRAL AND TOMBSTONE AND MUCH OTHER "STUFF" IF YOU ARE INTERESTED DROP ME A NOTE... REV. GEORGE J. THOMSON.. W9CHP, 309 SPRUCE STREET, MONON, IN 47959.

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FOR SALE: BATTERY SETS, HORNS AND CONE SPEAKERS, LSASE for list. H. FOTHE, 10 JACKSON STREET, SLOATSBURG, NY 10974.

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B-K PRECISION MODEL 415, solid state sweep/ marker generator radio Rider manuals vol. 1 to 23, vols. 1 to 19, vol. 1 to 13, Rider T.V. manuals vol. 1 to 7. Clarence Stevahn, P. O. Box 576, Wishek, ND 58495. (701) 452-2790.

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FOR SALE - BATTERY AND ELECTRIC RADIOS, 1926 NRI Radio course, RCA Service manuals, other books and test equipment, dial belts, parts and tubes. SASE for list. Jim Briscoe, Box 71B R R 5, Rushville, IN 46173.

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WANTED

WANTED — SMALL TABLE MODEL RADIOS FROM 1930s THROUGH 1950s IN BAKELITE PLASTIC, MIRRORED OR ART DECO STYLE. H. GRINER, 2300 S.W. 81 AVE., MIAMI, FL 33155. PHONE 1 (305) 264-3170 AFTER 6 P.M.

WANTED: PICTURE TUBE TESTER- COMPLETE IN GOOD CONDITION. FRED EMERSON, 627 ILLINOIS AVENUE, ELGIN, IL 60120.

PILOT MODEL L-8 CHASSIS, (2.5V HEATER TUBES), JUNKER O.K. NATIONAL SW-3 COILS OR COIL FORMS. KAPLAN, 14902 84TH AVENUE CT. NW, GIG HARBOR, WA 98335.

PHILCO 15DX CHASSIS AND SPEAKERS or will sell good cabinet for same. 125 FLICK OF SWITCH. Marion Van Hal, 1328 Orchard Dr., Pella, IA 50219.

WANTED: REPAIR on some of my old radios (Philco, Motorola, Majestic, Truetone, etc.). Also need tube tester. D. A. Ehrlich, Box 510, 528 Nagel, Follett, TX 79034.

ORION'S "76-77" CB RADIO TRADE BOOK, NOSTALGIC CB BUFF. GARY CAPPOEN, 18025 NE CHEHALEM DRIVE, NEWBERG, OR 97132.

GRANDFATHER CLOCK RADIOS, FANCY HORNS, 1920s PORTABLES, DeFOREST and KELLOGG TUBE AC SETS. ROSENTHAL, 507 S. MARYLAND AVENUE, WILMINGTON, DE 19804.

WANTED: DYNASCAN 1000 IN STILL GOOD CONDITION. OK ON SMALLER TUBES MISSING. CONDITION ON C.R.T. IF KNOWN?. IT MAY BE REJUVINATED IF NOT COMPLETELY DONE IN, SHOULD HAVE SOME EMISSION, NO SERIOUS SCREEN DEFECTS LIKE HALOS OR SILVERING. KNOWN SUBSTITUTE?. DYNASCAN PICKUP AND RF GENERATOR USING 931-A. GOOD CONDITION PREFERABLE. OK ON MISSING TUBES SAVE PHOTOMULTIPLIER. CBS COLOUR WHEELS, COLOUR SLAVE 15"-17" GOOD CONDITION. COLOUR PHOTOS, SLIDES 16MM COLOUR MOTION PICTURES FROM STUDIO MONITOR OR OTHER. WOULD WELCOME CORRESPONDENCE FROM COLLECTORS OF CBS MATERIAL. D''ARCY BROWNRIGG, P. O. BOX 292, CHELSEA, QUEBEC, CANADA, JOX 1NO.

WANTED: ELECTRON TUBES AND EARLY audio/ stereo equipment. Ex. — Marantz, McIntosh, W.E., etc. Tubes - 50, 250, 350, 450, 45, 245, etc. — plus many W. E. types. Please contact me with anything of interest. Charles Dripps, 4331 Maxson Road, El Monte, CA 91732 (818) 444-7079.

WANTED Crystal set radios, varible condensers, coils, variometers, crystal detectors, carborundum detectors, galena crystals, cat whiskers, headphones, terminals, tap switches, headphones, circuit diagrams, pictures, books, detector holders, coil forms, etc. Starting vintage radio company to supply kits, plans, parts to interest young people in radios instead of just computers. MiDCO, 660 North Dixie Highway, Hollywood, FL 33020.

S.A.S.E. is a self addressed stamped envelope.

WANTED COAXIAL OR TRIAXIAL SPEAKERS of Jensen, Trusonic, Tannoy, Altec 604's. Western Electric equipment (tubes, amps., drivers, horns, speakers, microphones and parts). Radio tubes (50's, 211, 845, 8005) David Yo, P. O. Box 832, Monterey Park, CA 91754. Tel. (818) 576-2642.

EVERYMAN'S GUIDE TO RADIO, VOLUMES two, three and four. (copyright 1926-1927) Brian Rhodes, 90 Francis Avenue, Stanhope, NJ 07874.

NORDEN HAUCK SUPER 10 cabinet, Norden Hauck R.F. coil A-6 for super 10. Federal 61 cabinet. Philco Predicta. J. Cunningham, 675 W. Ardmore, Roselle, IL 60172.

TV'S WANTED! pre 1955, 12" or smaller round tube (pot holes), Pilots, Philcos "swivel head," magnifier color wheels, early color sets, RCA CT-100. And, of course pre war sets! Buying bakelite and plastic radios, novelty sets, rep-woods, etc. B&K TV analyst wanted. Harry Poster, Box 1883, South Hack., NJ 07606. (201) 794-9606/ 956-6680.

HALLICRAFTER SX-71 receiver, Roy Schmitt, Rt. 1, Box 800 Lot 84, Converse, TX 78109, (512) 658-2669.

CATHEDRAL RADIOS, MUST BE NICE AND WORKING CONDITION. WILL PAY TOP DOLLAR. ALSO WANT OTHER UNUSUAL AC RADIOS. HAROLD PERKINS, 4468 SUN VALLEY DRIVE, LAS VEGAS, NV 89121.

WANTED: INSTRUCTION MANUAL FOR E.I.C.O. VOLT - OHM METER - MODEL 249, SERIAL # 8141, XEROX COPY O.K. M. J. POWELL, BOX 72, HOPE, ND 58046.

WANTED. PARTS FOR GREBE CR 9. All small parts, no cabinet or panel. Walter Reichert, 217 East Lyons Street, Marissa, IL 62257.

STRONG BUYER! Wanted colored "bakelite" radios. All manufacturers, also mirrored radios! Mark Honea, 13201 N.W. 81st, Parkville,

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WANTED: DOES ANYONE HAVE A DeFOREST PROFESSIONAL DETECTOR BOX? NEED DIMENSIONS FOR PANEL PARTS, PLACEMENT AND LETTERING INFORMATION. ROSS SMITH, 1133 STRONG AVENUE, ELKHART, IN 46514.

WANTED: SUPREME BEITMAN MANUALS R-17, R-18, TV-6, TV-15, TV-19, TV-26, TV-27, TV-29, Craig Larson, 2122 45th Avenue, Minneapolis, MN 55421.

PARTS CHASSIS or good power transformer for A.K. model 82, Marion Van Hal, 1328 Orchard Drive, Pella, IA 50219. (515) 628-2347.

WANTED: COLORFUL BAKELITE RADIOS BY ALL MANUFACTURERS! Also mirrored and novelty radios. Mark, 13201 N.W. 81st, KC, MO 64152. (816) 891-2441.

WANTED: High voltage electrostatic volt meter. Send specifics to TCBA, RD3 Box 181, Glens Falls, NY 12801.

WANTED — ORION'S "76-77" CB RADIO TRADE BOOK, NOSTALGIC CB BUFF. GARY CAPPOEN, 18025 NE CHEHALEM DRIVE, NEWBURG, OR 97132.

TV COLLECTOR WANTS: PRE-1955 TV'S, PORT HOLES, COLOR WHEELS. TV RIDERS INDEX (TO #25?). PRE 1950 TV BOOKS, 1930'S "TV NEWS". ALSO WNAT 1940-1960 BAKELITE AND PLASTIC RADIOS! NEED NOT BE CATALIN—— IF THEY LOOK INTERESTING, I'D LIKE THEM! PLUS CHAIRSIDES, PRETTY CONSOLES, REP WOODS. HARRY POSTER, (201) 794-9606/ 956-6680.

RIDERS TV#1 AND 2 — FOR SALE/ TRADE. I NEED PILOTS, PREDICTAS, PORTHOLES, MAGNIFIERS. HARRY POSTER, BOX 1883, SO. HACK., NJ 07606.

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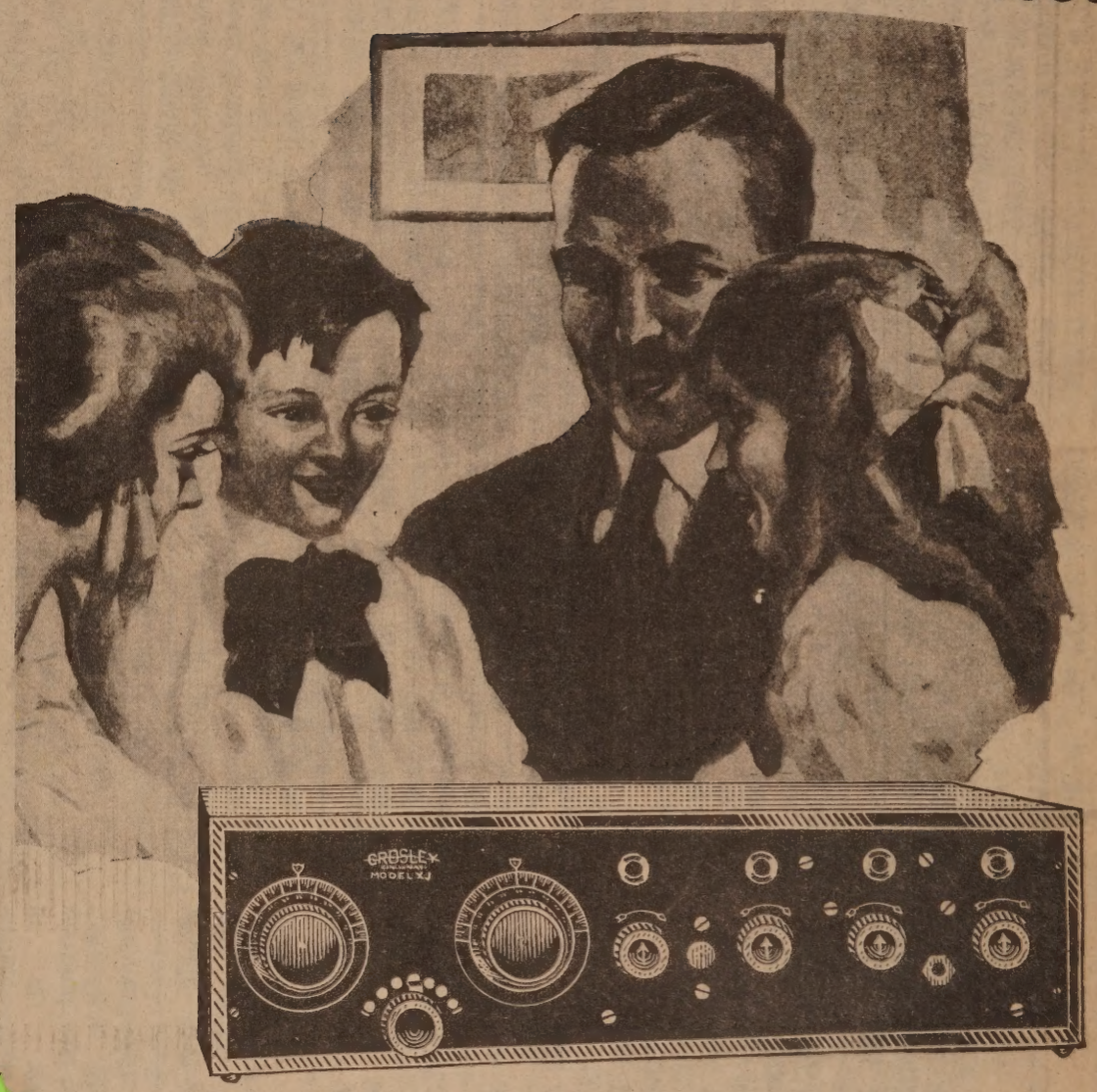

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